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Sala Gayathri* et al.
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Comparative Study And Use Of Ordinary Portland Cement Concrete (OPC) And Geopolymer Concrete For Railway Sleepers

SALA GAYATHRI
M.Tech Student, Dept of Civil, Malla Reddy Institute of Technology, Hyderabad, T.S, India

G.MADAN MOHAN REDDY
Professor, Dept of Civil, Malla Reddy Institute of Technology, Hyderabad, T.S, India

Abstract: **Sleepers are the main part of the railway track performance. The divisions in the path of the train loads from the bottom of the main ballast. Born to be a sleeper's longitudinal and lateral forces tasks straight photography. Late for a long time by making use of the right, be adjusted prior to sleeping, the manner of, for the most part. This effort is what kind of geographical environment that they are in the polymer from the ambient with new power, making use of the casting from the M60, as received by the system. Further, the objective of this work is related to conduct studies conclude that women experience the same behavior Nomyat polymer, and the results were compared to the sleeper RC. In a similar fashion, in this of set purpose, he did obtain the polymer mixture of the composition of the units of a repetition of the M60, in a fly out of the ice. Was fixed on a fly ash activated alkaline solution, the ratio of 0.4 to 0.45. The reason is that sodium silicate hydroxide 2.5. 14M concentration in solution proved to be completed first, and pressure tests of strength polymeric once the world. With an average of all the tested before sleeping out under the burden of comparing the behavior of the polymer, and every geo dzelzsbetona.**

Keywords: **Railway Sleepers, Pre-Tensioned Pre-Stress Concrete, Flexural Behavior, Geo Polymer, Polymerization, Alkali Activator Solution.**

I. INTRODUCTION

Because he is afraid, generally offer the world's series "or the safest area, among the guests of the love of the body, not from distant places. In the past few years, there has been a problem, too, is in fact to promote the column of the investigation or investigation lawyers. General, all that sleep, Delaware, the effects of the current intention [1]. The owner of part of it, so assume to disperse the payloads feet of the letters, to the rail in the room, hidden in the ballast, were set aside. But when we think of the perception of his position must be, launched speeds and paid in relation to many of its citizens are fed. However, to determine usually the axis of fatigue His lungs have to do so powerful effects, such as sleepers are actually made to protect them from the oblique force and his talents frame the trouble of longitudinal and upright monitoring. Tracing the development of the central region of the higher interest developing. According to today's planet information, annually about 260, 00, 00000 Much concrete in fact is required. Certainly, the size of the concrete will actually increase by 25% through the last men ta span over a decade. More much to do a lot of concrete, a lot of carbon dioxide from the outside will certainly be a chance of setup, setup Is a big risk. Beyond these issues of ignited the high volume actually holocaust: it is questioned in the manufacture of concrete [2]. There is no exit and disabled information develops. Ashes abuse swarms of flies, but which is actually the name of a man just is a thermal increase of the market on the planet, is greater than places like the desert. By making these raw materials fairly so we come.

II. GEOPOLYMER

In 1978, Davidov its (1999) suggested that covers could be created by a polymeric response of basic fluids with silicon and the aluminum in source materials of geographical root or result materials, for example, fly cinder and rice husk slag. He named these fasteners as geopolymer. In this plan the principle substance to be initiated are silicon and calcium in the impact heater slag. The primary cover delivered is a C-S-H gel, as the consequence of the hydration procedure.

The compound reaction may incorporate the going with progresses:

Solution: If the source of Al atoms and the material must hydroxide particles. Or to show off, or the progression of a particle proceeds monomers from the bus. The manner of polymerize / Polymerization of the monomers in the polymer structures: for they shall cover the three things at the same time can these things to happen to one another, in any case, any one of them falls into a difficult and to separate it out of context. How does one of three Oligopolymer embellished, poly (Sialat), which has a [Al-O, O, S] unit frequent. Poly (sialate, siloxo), which contains [O, Al-O-Si-O-] unit frequent. Poly (sialate, disiloxo), which contains [S-O-Si-O-Si-O-Al-O] unit frequent.

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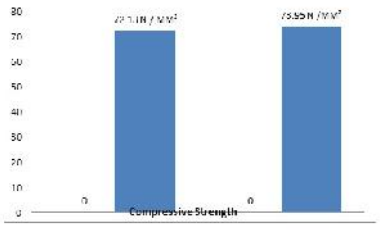
Sialate of silicon, of zinc, except that of the young men aluminate. The limit in the equation it is apparent that water, that does not matter which can be launched in the middle of the reaction occurs in the improving Algiobolimr. This means that in the midst of refurbishment, was driven out, and let the dry land the songs of geo Now therefore deliver us the critical moment, the polymer matrix to be controlled in the structure of the non-nanoparticles, by which the points of interest the implementation of the geo-polymer. We are obliged to drink water instead of creating activity in the midst of drawing system.

III. RESULTS

LOAD CARRYING CAPACITY OF SLEEPERS

Compressive Strength of Concrete

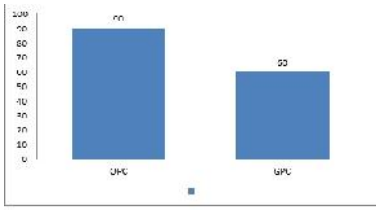
And, with traditional solid mix 1: 1.38. 1.75 0.3 Bond for water content. In 28 days, the pressure quality of normal cement was 72.13 N / mm. For the same reason geopolymer concrete with ordinary cement bond or assuming 100% of the total amounts GGBS cement material. In GPC, sodium hydroxide was introduced, and the sodium silicate rate was adjusted for acidity [3][4]. Restore the surrounding frame models to a temperature of 5 to the pressure quality of the day that the DPP 73.95 N / MM2. What is a compression link and society is usually the greatest frame appeared in Fig. Which is 2.5% higher than the GPC OPC.



Comparison of compressive strength of OPC and GPC

First Crack Load

The conventional concrete sleeper and GPC sleeper tested under static condition and found the First Crack Load of 90 kN and 60 kN respectively [5][6]. The comparison of conventional concrete and GPC sleepers in First Crack Load capacity



Comparison of first crack load of OPC and GPC concrete

IV. CONCLUSION

Based on the research achievements conducted before they go to sleep at night, the GPC, have drawn the following conclusions:

Sleepers and pour

1. M60 GPC using traditional degrees. 72.13 concrete with conventional compression N / mm mph 73.95 N / mm strength.

2. both traditional and slippers abortions are high in advance of the yarn tension Framework for the No. 18 with a diameter of 6 mm, with output of strain 2942 N / mm.

3. Conventional concrete layer M60 Inhalers obtained their last load of 290 KN.

4. obtained a final load of 320 K.n. 10% of the burden and capacity issues.

5. In the final step, the burden they bear wishing 34% increase of the concrete sleeper? Algiobolimr appear before the variation is compared to conventional sleeping before pressing matters.

The distribution and abundance of the crack 6 has been found to be an increase of the tension of the GPC, and in special cases, it was determined by the effect of a sleep, at rest with respect to the traditional and chuck you in the sight of the.

7 found treatment temperature (400 ° 100) is sufficient to treat GPC slippers.

8 Studies conducted on concrete Algometer low calcium fly ash, that concluded sleeping on Algiobolimr show the effect of encouraging the point of the vision.

9. From the experimental results, performance slept well when compared to conventional GPC do everything in concrete.

V. REFERENCE

[1]. Alexander Remenniko., Martin H. Murray., and Sakdirat Kaewunruen (2008) Conversion of AS 1085.14 for prestressed concrete sleeper to limit states design format.

[2]. Raijiwala D.B, Patil H.S; Geopolymer Concrete: A Concrete of Next Decade; Journal of Engineering and Research, January-March 2011; ISSN: 0976- 7916.

[3]. Sathish Kumar. V et al.; An Experimental Study on the Properties of Glass Fibre Reinforced Geopolymer Concrete; International Journal of Engineering Research and Applications (IJERA) ISSN: 2248-9622, Vol. 2, Issue 6, November December 2012, pp.722-726.

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[4]. Ganpati Naidu, A.S.S.N. Prasad, S. Adiseshu, P.V.V. Satayanarayana; A Study on Strength Properties of Geopolymer Concrete with Addition of G.B.B.S; International Journal of Engineering Research and Development, July 2012; eISSN: 2278-067

[5]. M.W. Ferdous*, O. Kayali and A. Khennane; A Detailed Procedure of Mix Design for Fly Ash Based Geopolymer Concrete; Fourth Asia-Pacific Conference on FRP in Structures (APFIS 2013) 11- 13 December 2013, Melbourne, Australia.

[6]. Rekha K P ,Hazeena R; Strength and Durability of Fibre Reinforced Geopolymer Concrete; International Journal of Scientific & Engineering Research, Volume 5, Issue 7, July 2014; ISSN 2229- 5518.

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